MOBILE RADIO

MASTR PROGRESS LINE

MOBILE CONTROL UNIT MODELS 4EC59A84, 86, 88 & 90

SPECIFICATIONS *

MODEL NUMBERS	4EC59A84, 86, 88 & 90
USED WITH	MASTR Royal Professional Mobile Combinations with Search-Lock Monitor
CONTROLS	VOLUME Control OFF-ON-STBY Switch SQUELCH Control F1-F2 Selector Switch Search-Off Switch Dimmer Control for Pilot Lights
INDICATORS	Transmitter filament-on light: green Transmit light: red

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

GENERAL ELECTRIC

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ILLUSTRATIONS

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with voltage of RF power; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

DESCRIPTION

MASTR Progress Line Control Units Models 4EC59A84, 86, 88 and 90 are used with MASTR mobile combinations that are equipped with the Search-Lock Monitor (SLM) option. They are compact, highly functional control units designed for either Trunk-Mount or Front-Mount mobile combinations.

In Trunk-Mount installations, a plate is installed on the back of the Control Unit to hold the connectors. A mounting bracket is provided for mounting the Control Unit within convenient reach of the operator. In Front-Mount installations, the Control Unit is attached to the front of the MASTR Two-Way Radio.

Cable connections are secured to the Control Unit by means of captive locking screws.

CIRCUIT ANALYSIS

CONTROLS

In addition to VOLUME and SQUELCH controls, the control units are provided with the controls described in the following paragraphs.

OFF-ON-STBY Switch (S701)

The OFF-ON-STBY (standby) switch determines whether or not the transmitter and receiver are operative. With the switch in the OFF position, all power is removed from the Two-Way Radio. Turning the switch to STBY applies power to the receiver only, and the green pilot light does not light.

Turning the switch to the ON position enables the push-to-talk (PTT) circuit, lights the green pilot light, and applies +12 volts to the receiver and power regulator.

Pushing the PTT button on the microphone lights the red pilot light, energizes the antenna changeover relay, and applies a keyed voltage to the transmitter and power regulator. The keyed voltage also mutes the reciever audio stages.

F1-F2 Frequency Selector Switch (S704)

The frequency selector switch selects the desired channel (F1 or F2) for both transmitting and receiving. However, frequency selection is affected by the position of SEARCH-OFF switch (S710).

SEARCH-OFF Switch (S710)

With the SEARCH-OFF switch in the OFF position, +10 volts is applied through the frequency selector switch to the selected receiver oscillator, over-riding the SLM. The frequency selector switch also connects the transmitter oscillator to ground, so that the radio will operate on the frequency determined by the selected transmitter and receiver oscillator.

With the SEARCH-OFF switch in the SEARCH position, no voltage is applied through the frequency selector switch to either receiver crystal-switching diode, permitting the Search-Lock Monitor circuit to operate. The SLM then provides two-channel sequential monitoring by alternately switching +10 volts between the receiver crystal-switching diodes at a rate of approximately eight times per second.

When a signal is received on either channel, the SLM will "lock" on that channel for the duration of the signal.

NOTE

On mobile combinations with Channel Guard, the Channel Guard normally operates in both the F1 and F2 position. For Channel Guard operation on F1 only, remove the jumper connected between S704-5S and S704-6S.

Dimmer Control (R705)

The dimmer control is a rheostat in series with the power-on and frequency indicator lights. Turning the control adjusts the amount of light that is given off by the lamps.

CHANNEL GUARD-OFF Switch (S703)

Placing this switch in the OFF position disables the receiver Channel Guard so that the receiver operates on noise squelch only.

VEHICLE IGNITION SWITCH CONNECTIONS

The Control Unit may be connected for three different modes of operation, depending on the way the three ignition switch cables are connected in the vehicle system. The black ignition switch cable provides the receiver ground connection. The yellow

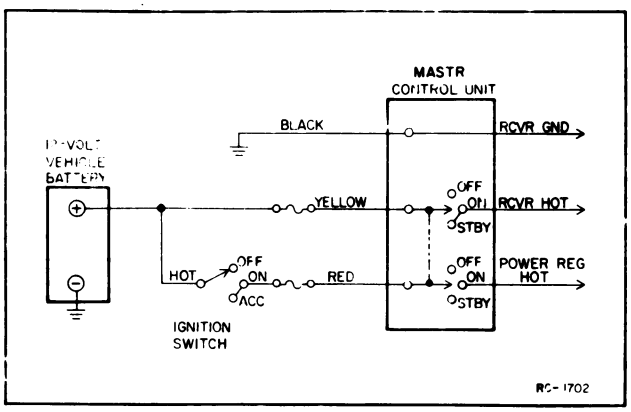


Figure 1 - 12-VDC Connections for Ignition Switch Standby

fused lead provides the receive hot connections, and the red fused lead provides the +12 volts for the power regulator. The three types of operation are:

1. Ignition Switch Standby - For this type of operation, the red fused lead (power regulator voltage) is connected to the ACCESSORY or ON terminal of the ignition switch. The yellow fused lead (receiver hot) is connected to the hot side of the ignition switch, and the black lead connects to vehicle ground.

With the ignition switch OFF, the receiver automatically reverts to STBY, ready to receive messages. Turning the ignition switch to the ON or ACCESSORY position turns on the green pilot light and supplies power regulator voltage. Turning the OFF-ON-STBY switch to OFF removes all power to the Two-Way Radio.

2. Ignition Switch Control - For ignition switch control, the yellow and red fused leads are connected to the ACCESSORY or ON terminal of the ignition switch. The transmitter and receiver will operate only when the ignition switch is in the ACCESSORY or ON position. Turning the ignition switch OFF removes all power to the radio.

3. Ignition Switch Bypass - For ignition switch bypass, the yellow and red fused leads connect to the "hot" side of the ignition switch or the vehicle fuse block assembly. Both the transmitter and receiver operate independently of the ignition switch and can be turned on the off only by the OFF-ON-STBY switch on the MASTR Control Unit.

MAINTENANCE

DISASSEMBLY

In Trunk-Mount installations, access to the inside of the Control Unit is obtained by removing the two Phillips-head screws in the back of the unit and pulling the back panel away from the housing.

In Front-Mount installations, remove the two Phillips-head screws holding the front casting to the frame and move the casting away from the frame. Next, remove the two screws securing the control cable plug to the inside of the front casting. Then remove the two flat-head screws holding the Control Unit to the front casting.

PILOT LIGHT REPLACEMENT

The pilot lights can be easily replaced without disassemblying the Control Unit. First, unscrew the colored lens. Then wrap a small piece of masking tape around the bulb, to give the fingers a firm grip, and unscrew the bulb.

REINSTALLATION

The Royal Professional mobile combination operates in 12-volt, negative ground vehicle systems only! If the radio is ever moved to a different vehicle, always check the battery polarity and voltage of the new system before using the radio.

CAUTION

Do not install the Royal Professional in a vehicle system using a circuit breaker. The radio must be operated in a system protected by a 15-amp quick blow fuse (similar to GE Fuse Assembly 19B216021-G4 and fuse 1R11-P4).

If it becomes necessary to move the Two-Way Radio and Control Unit to another vehicle, the 25-pin control cable plug may need to be disassembled. Refer to Figure 2 for disassembly of the plug.

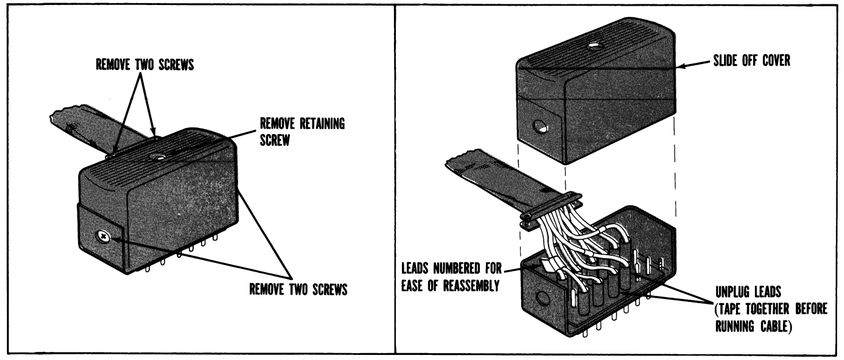
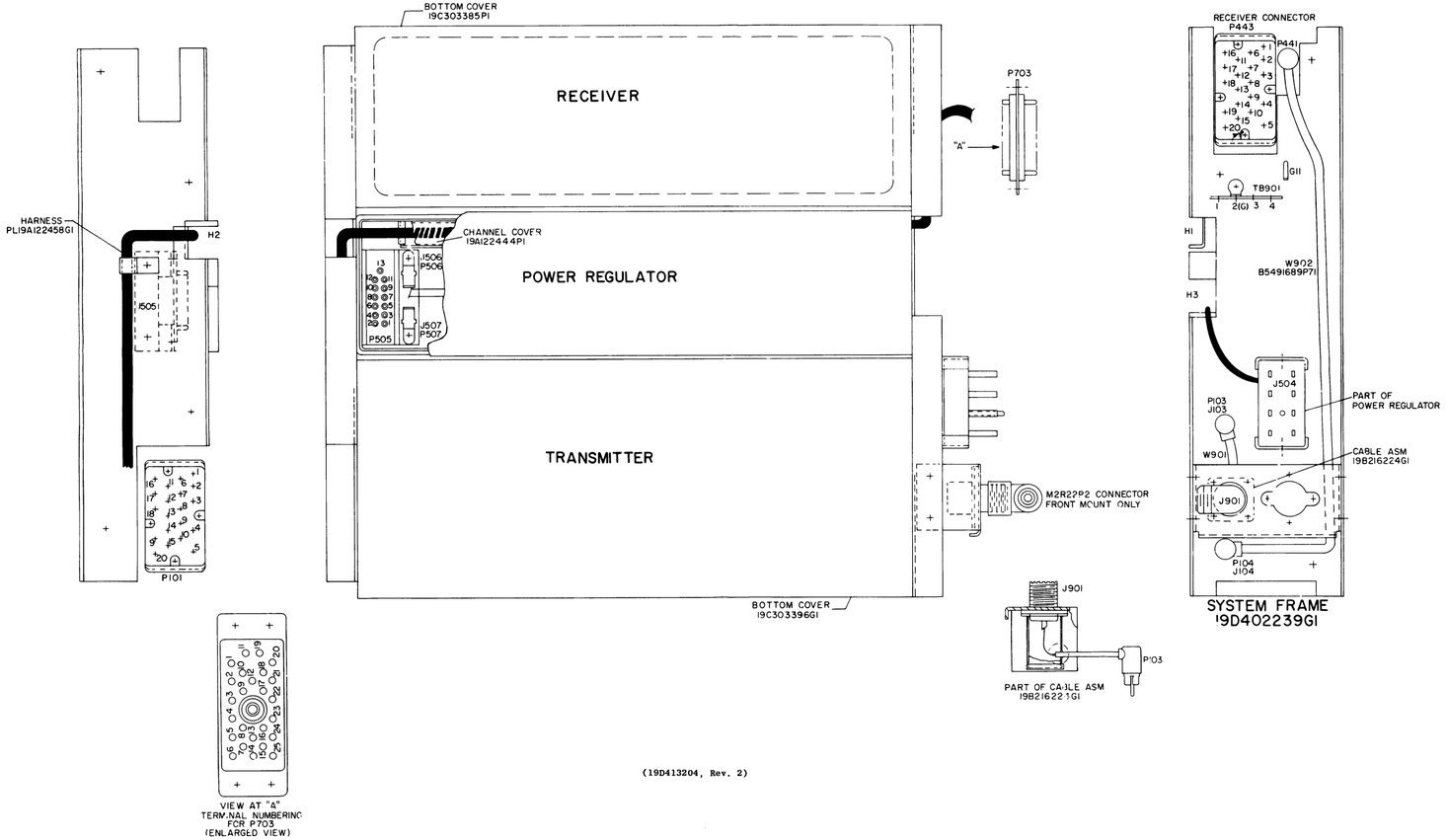


Figure 2 - Disassembly of Control Cable Plug

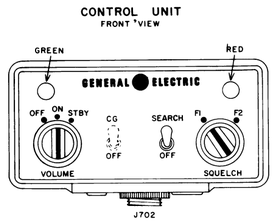
NOTE

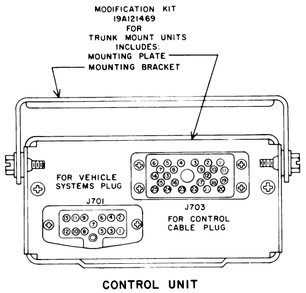
The plug is assembled so that the cable comes out of the top of the plug when connected to the Control Unit. To have the cable come out of the bottom of the plug, remove the remaining two screws and rotate the metal frame 180 degrees.

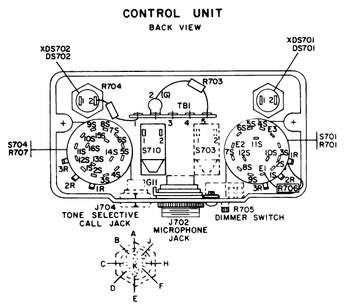


(19D413204, Rev. 2)

CONTROL UNIT







[illegible]	[illegible]
[illegible]	[illegible]
P707	[illegible]
[illegible]	[illegible]
S710	SEARCH OFF
[illegible]	[illegible]
S704	FREQUENCY SELECTOR

(19C317730, Rev. 0)

OUTLINE DIAGRAM

MOBILE CONTROL UNIT
MODELS 4EC59A84, 86, 88 & 90

MODEL NUMBER	REV. LETTER	NO. OF FREQ.	BASIC	CHANNEL GUARD MONITOR SWITCH	TONE OPTION JACK	TONE OPTION & CHANNEL GUARD
4EC59A84		2	X			
4EC59A86	A	2			X	
4EC59A88		2		X		
4EC59A90	A	2				X
4EC59A128		2	X			
4EC59A129	A	2			X	
4EC59A130		2		X		
4EC59A131		2				X

▲ DIMMER CONTROL OPTION
ADD DOTTED CONNECTIONS & OMIT WIRE FROM TB1-5 TO XDS701-1

■ TONE SELECTIVE CALLING
OPTIONAL

◓ SPEAKER MUTE
OMIT DA WIRE WHEN J704 IS USED.

⊠ CHANNEL GUARD SWITCH
OMIT IN MODEL 4EC59A84

NOTES:
1. ALL WIRES N24 UNLESS OTHERWISE SPECIFIED.
2. OMIT DA WIRE WHEN R706 IS USED.
3. ADD W WIRE WHEN PL19B204970G1 HOOKSWITCH IS USED.
4. FOR CHANNEL GUARD ON F1 ONLY REMOVE DA WIRE.

(19D413694, Rev. 6)

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF=MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH=MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

NOTES:
1. ALL WIRES ARE SF24 EXCEPT AS OTHERWISE SHOWN
2. SEE 19D402763 FOR ORIENTATION AND LOCATION OF COMPONENTS AND ROUTING OF CABLE
3. N22SJ-W-G WIRE IS A7134854-P4
   N22SJ-W-BL WIRE IS A7134854-P5
   18-G-BK WIRE IS A4035028-P9
   18-BR-Y WIRE IS A4035028-P11
4. TERMINATE WIRES AT J506 & J507 WITH A7117269-P1

(19D413896, Rev. 0)

(DF-4080)

SCHEMATIC & INTERCONNECTION DIAGRAM

MOBILE CONTROL UNIT
MODELS 4EC59A84, 86, 88 & 90

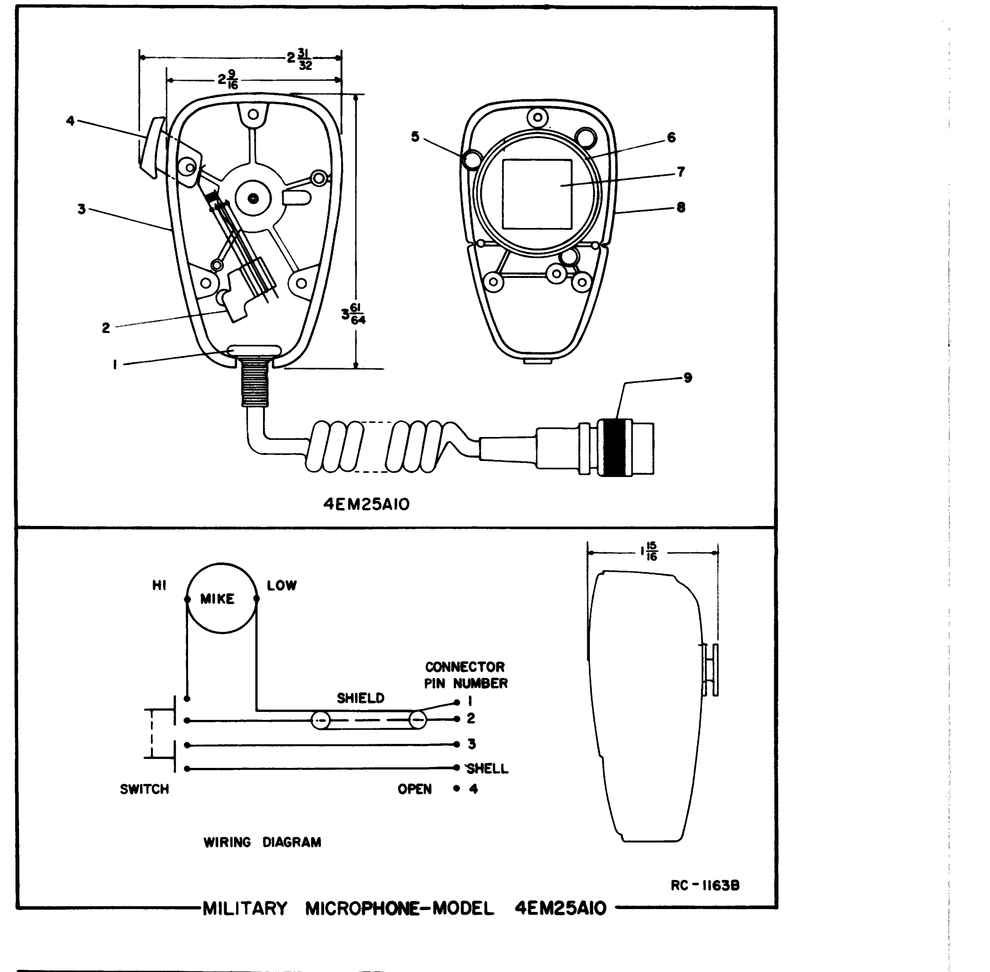
PARTS LIST

LBI-4195

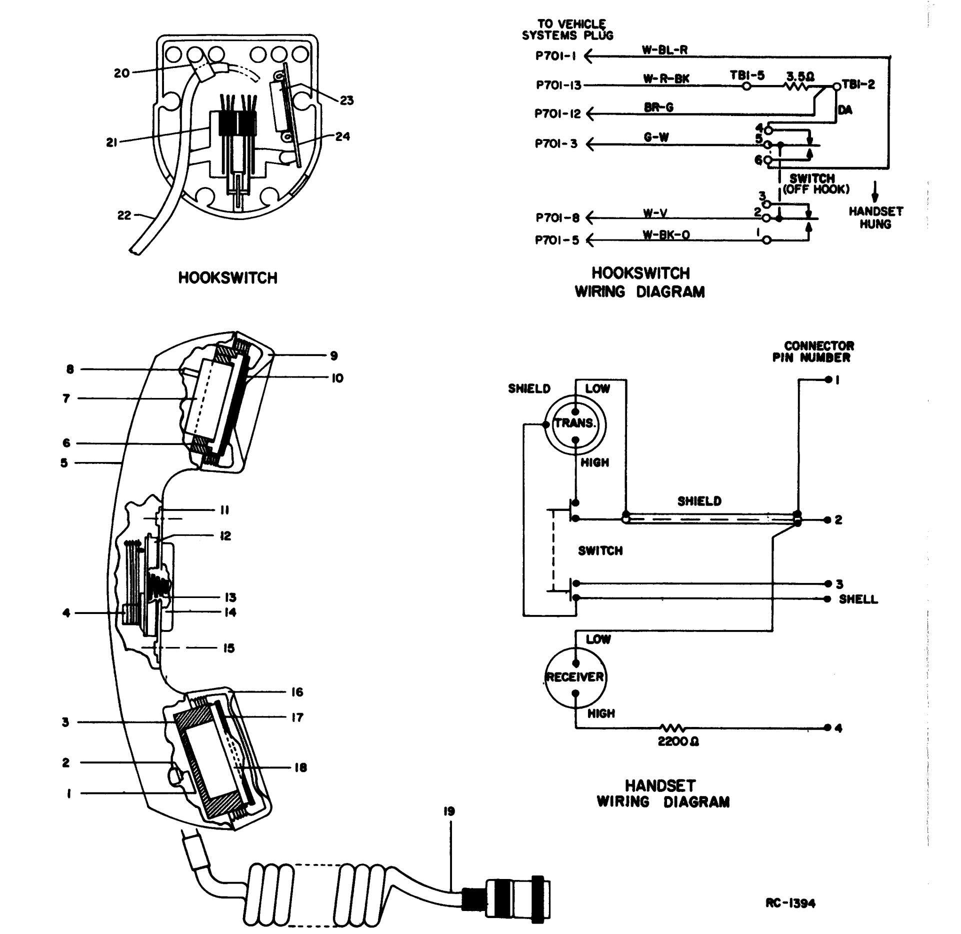
CONTROL UNIT
MODELS 4EC59A84, 86, 88, 90
19D413054-G10
AND
ASSOCIATED ASSEMBLIES

SYMBOL	GE PART NO.	DESCRIPTION
		CONTROL UNIT 19D413054-G10
		- - - - - - - - - - INDICATORS - - - - - - - - - -
DS701 and DS702	19B201122-P1	Lamp, indicator: 6 v; sim to GE 1768.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J701	19C303576-P1	Socket, phen: 13 contacts rated at 5 amps max.
J702	19A116061-P1	Connector, chassis: 4 female contacts.
J703	19D402408-P1	Connector, phen: 25 contacts rated at 5 amps max.
J704	19B216279-G1	Jack assembly: 9 female contacts rated at 5 amps at 900 VRMS; sim to Winchester M9S-LRN.
		- - - - - - - - - - - RESISTORS - - - - - - - - -
R701		(Part of S701).
R703 and R704	5493035-P19	Wirewound, ceramic: 67 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
R706	3R77-P100K	Composition: 10 ohms ±10%, 1/2 w.
R707		(Part of S704).
		- - - - - - - - - - - SWITCHES - - - - - - - - - -
S701	19C307089-P19	Switch/Resistor: includes Switch, rotary, 3 poles, 3 positions, momentary shorting contacts, 250 ma at 500 VRMS; Resistor (R701), variable, 5000 ohms ±20%, 1/2 w max; sim to Mallory LC5K.
S703	5491899-P5	Toggle: SPST, 3 amps at 250 VAC or 250 VDC; sim to Cutler-Hammer 8280K15.
S704	19C307089-P22	Switch/Resistor: includes Switch, rotary, 4 poles, 2 positions, momentary shorting contacts, 250 ma at 500 VRMS; Resistor (R707), variable, 2500 ohms ±10%, 1 w max; sim to Mallory LC2500.
S710	5491899-P4	Toggle: DPDT, 6 amps at 125 VAC/VDC; sim to Cutler-Hammer 8373K8.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	7775500-P9	Phen: 5 terminals.
		- - - - - - - - - - - SOCKETS - - - - - - - - - -
XDS701 and XDS702	19B201122-P2	Lampholder: sim to Drake Series 121.
		MECHANICAL PARTS (SEE RC-2031)
1	19A115495-P1	Screw, hex head: 1/4- 20 x 5/8.
2	19A121521-G1	Mounting Bracket.
3	19B201122-P3	Lens cap; green translucent nylon.
4	NP257936	Nameplate; etched aluminum. (Used with standard Models).
5	NP270333	Nameplate; etched aluminum. (Used with Channel Guard Models).
6	19B201122-P4	Lens cap; red translucent nylon.
7	19B204443-G1	Knob, gray: ON-OFF/FREQUENCY SELECT.
8	19C313413-P1	Knob: VOLUME/SQUELCH.
9	19B216271-G1	Housing.
10	19B204522-P1	Mounting plate.
		ASSOCIATED ASSEMBLIES
	19A121469-G1	Control unit modification kit (trunk mount).
	19D402239-G1	12 volt vehicles frame.
	19A122444-P1	Cover, wire channel (on systems frame).
	19C303452-G1	Front casting (Front mount).
	19C303452-G2	Front casting (Trunk mount).
	5491682-P2	Lock: Yale and Towne. (Part of Front casting).
	5491682-P7	Cam. (Used with lock).
		POWER CABLE ASSEMBLY 19C303601-G1 (12 VOLT FRONT MOUNT) 19C303601-G2 (12 VOLT TRUNK MOUNT)
	19B209189-P1	Connector, phen: 8 contacts rated at 15 amps at 1100 VRMS; sim to Beauchaine and Sons S-5401-76.
	19D402438-P1	Cap, connector.
	19A115313-P1	Cable: 3 conductor, approx 9 feet long. (Used in 19C303601-G1).
	19A115314-P1	Cable: 3 conductor, approx 18 feet long. (Used in 19C303601-G2).
		CONTROL CABLE ASSEMBLY 19C303626-G1, G2 (SINGLE FREQ) 19C303626-G3, G4 (MULTI-FREQ)
		- - - - - - - - - - - - PLUGS - - - - - - - - - - -
P1	19C303626-G5	Plug, male, includes: connector 19D402408-P3, cap 19C303290-P2.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J1	19C303626-G6	Plug, female, includes: connector 19D402408-P1, cap 19C303290-P1.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	19D402408-P1	Connector, female phen: 25 contacts rated at 5 amps max.
	19D402408-P3	Connector, male phen: 25 contacts rated at 5 amps max.
	19C303290-P1	Cap, connector. (Used with 19D402408-P1 connector).
	19C303290-P2	Cap, connector. (Used with 19D402408-P3 connector).
	7139880-P8	Cable, single freq: 13 conductors, approx 18 feet long. (Specify length when ordering).
	7139880-P8	Cable, single freq: 13 conductors, approx 23 feet long. (Specify length when ordering).
	7139880-P11	Cable, multi freq: 23 conductors, approx 18 feet long. (Specify length when ordering).
	7139880-P11	Cable, multi freq: 23 conductors, approx 23 feet long. (Specify length when ordering).
		VEHICLE SYSTEM CABLE KIT 19A121454-G1 (12 VOLT VEHICLES)
	19A121429-P1	Pin: 1/2 inch long.
	19A121441-G1	Plug: 13 contacts.
	19C303574-P1	Cover.
		FUSED LEAD ASSEMBLY 19A121314-G1 (19A121454-G1)
	1R16-P8	Fuse, cartridge, quick blowing: 5 amps at 250 v; sim to Littelfuse 312005 or Bussmann MTH-5.
	19A115776-P2	Fuseholder: sim to Bussmann Type HDJ-B.
		INTERCONNECTION HARNESS ASSEMBLY 19A122458-G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J505	19A122683-G1	Plug, male: 13 pin contacts.
		- - - - - - - - - - - - PLUGS - - - - - - - - - - -
P101	19C303506-P1	Connector, phen: 20 contacts rated at 5 amps max at 600 VDC.
P443	19C303506-P1	Connector, phen: 20 contacts rated at 5 amps max at 600 VDC.
P703	19D402408-P2	Connector, phen: 25 contacts rated at 5 amps max.
		- - - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB901	7775500-P10	Phen: 4 terminals.
		ANTENNA CABLE ASSEMBLY 19B216224-G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J901	2R22-P3	Receptacle, panel, coaxial: mica-filled insert, UHF contact. Signal Corps SO-239 or sim to Amphenol 83-1R.
		- - - - - - - - - - - - PLUGS - - - - - - - - - - -
P103		(Part of W901).
		- - - - - - - - - - - CABLES - - - - - - - - - -
W901	5491689-P56	Cable, RF: coaxial, approx 12 inches long. Includes phono type plug (P103).
	2R22-P2	Adapter, right angle, coaxial: polystyrene, UHF contact. Signal Corps M-359; sim to Amphenol 83-1AP. (Front mount only) (Connect to J901).
		RECEIVER RF CABLE ASSEMBLY
		- - - - - - - - - - - - PLUGS - - - - - - - - - - - -
P104		(Part of W902).
P441		(Part of W902).
		- - - - - - - - - - - - CABLES - - - - - - - - - -
W902	5491689-P71	Cable, Receiver, RF: includes two phono type plugs (P104 and P441), 350 VRMS max, approx 12 inches long.
		12 VOLT FUSEHOLDER 19B216021-G4
	19D413045-P1	Base.
	19D413046-P1	Cover.
	19B205950-P1	Fuse clip.
		- - - - - - - - - - - - FUSES - - - - - - - - - - -
	1R11-P4	Quick blowing: 15 amps, 250 v; sim to Bussmann NON15. (transmitter).
		130 - 470 MHz ANTENNA MODEL 4EY12A13 (5490969-P13)
		Antenna: includes stainless steel whip approx 20 inches long; ball tip; whip socket; No. 6-32 set screw; rubber mounting gasket; antenna cable; cable adapter; PL-259 coaxial plug; sim to Antenna Specialists ASPD201GE or Danbury-Knudsen Type PA-25.
	5490969-P4	Whip: stainless steel, approx 20 inches long; ball tip.
	5490969-P5	Socket, whip: with (2) No. 6-32 set screws.
	5490969-P6	Whip and whip socket: stainless steel whip approx 20 inches long with ball tip; whip socket with (2) No. 6-32 set screws.
		Cable, antenna: approx 15 feet long. Type RG-58/U. (Used with GE Dwg 2R22-P1 and GE Dwg 7105381-P1).
	7105381-P1	Adapter, cable, Type UG-175/U. (Used with GE Dwg 2R22-P1 and Type RG-58/U cable).
	2R22-P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 7105381-P1 and Type RG-58/U cable).
		25 - 50 MHz ANTENNA
	7491074-P1	Antenna: includes stainless steel rod approx 96-1/2 inches long; ball tip; lockwasher; No. 10-32 hex socket set screw; sim to Antenna Specialists ASPA3BGE.
	7102930-P3	Adapter, antenna: approx 2-5/16 inches long. (Used with GE Dwg 7491074-P1).
	4033101-G1	Antenna package: includes base; adapter spring; cable and plug.
	7472880-G5	Antenna base. (Used in 4033101-G1).
	7476632-G4	Adapter spring. (Used in 4033101-G1).
	5492239-P1	Cable, antenna: includes Type RG-58/U cable approx 15 feet long; PL-259 coaxial plug; mounting clip; ring tongue terminal; sim to Antenna Specialists 15A43. (Used in 4033101-G1).
	2R22-P1	Plug, coaxial: mica-filled insert, UHF contact. Signal Corps PL-259; sim to Amphenol 83-1SP. (Used with GE Dwg 5492239-P1 in 4033101-G1).
	4KY9A1	Coil, loading: 25 to 33 MHz; sm to Antenna Specialists ASPA87.
	19A121577-G1	Antenna hook kit.
	7134724-P1	Antenna hook. (Used in 19A121577-G1).
		HANDSET MODEL 4EM26A10 (19B209100-G1) (SEE RC-1394)
1		Self tap screw, bind head: No. 4 x 5/16. Shure Brothers 30C640C.
2		Cable clamp. Shure Brothers 53A532.
3		Shield. Shure Brothers RP19.
4		Switch. Shure Brothers RP81.
5		Handle. Shure Brothers RP49.
6		Adapter. Shure Brothers 65A230.
7		Magnetic controlled cartridge. Shure Brothers RP41.
8	3R77-P222K	Resistor, composition: 2200 ohms ±10%, 1/2 w.
9		Receiver cap. Shure Brothers 65A199A. (Part of RP49).
10		Washer. Shure Brothers 34A321.
11		Escutcheon. Shure Brothers 53A536A.
12		Actuator. Shure Brothers 53A556.
13		Spring. Shure Brothers 44A140.
14		Plunger bar. Shure Brothers RP82.
15		Flat head screw, socket cap: No. 4-40 x 1/4. Shure Brothers 30C557B.
16		Transmitter cap. Shure Brothers 65A197A. (Part of RP49).
17		Washer. Shure Brothers 34A309.
18		Magnetic controlled cartridge. Shure Brothers RP13.
19		Cable and plug. Shure Brothers RP48.
		HOOKSWITCH ASSEMBLY 19B204867-G1
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
20	4029851-P4	Cable clamp; sim to WEC Kesser 3/6-4.
21	19A121612-P1	Holder and switch: thermoplastic case, contact rating 1 amp at 125 v.
22	19A121581-G1	Cable: approx 8-1/2 feet long.
23	5493035-P10	Resistor, wirewound, ceramic: 3.5 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
24	7775500-P55	Terminal board, phen: 5 terminals.
		MILITARY MICROPHONE MODEL 4EM25A10 19B209102-G1 (SEE RC-1163)
1		Cable clamp. Shure Brothers 53A532.
2		Switch. Shure Brothers RP-26.
3		Case (back) and mounting button: plastic. Shure Brothers RP-67.
4		Switch button: red plastic. Shure Brothers RP-25.
5		Spring. Shure Brothers RP-16.
6		Shield. Shure Brothers RP-23.
7		Magnetic controlled cartridge. Shure Brothers RP-13.
8		Case (front): plastic. Shure Brothers RP-67.
9		Cable and plug: approx 6 feet long. Shure Brothers RP-14.
		5 WATT SPEAKER 4EZ16A19 19D402449-G12
C1	19B209233-P1	Electrolytic, non-polorized: 25 µf ±20%, 25 VDCW; sim to Sprague 44DC.
LS3	19B209422-P1	Permanent magnet: 5 inch, 3.2 ohms ±10% imp, 2.98 ohms ±15% DC res, 7.5 w max operating.
W1	19A121546-G1	Cable assembly: approx 48 inches long, includes (2) 19A121429-P1 pins.
	19B216269-G2	Speaker housing.
	19A121550-G3	Cover.
	19A121521-G1	Mounting support.
	5490407-P3	Neoprene grommet. (Upper)
	19A115470-P1	Rubber grommet. (Lower)

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



MILITARY MICROPHONE-MODEL 4EM25A10



HANDSET - MODEL 4EM26A10 WITH HOOKSWITCH-PL-19B204867-G1

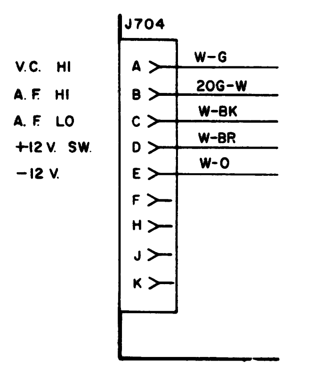
PRODUCTION CHANGES

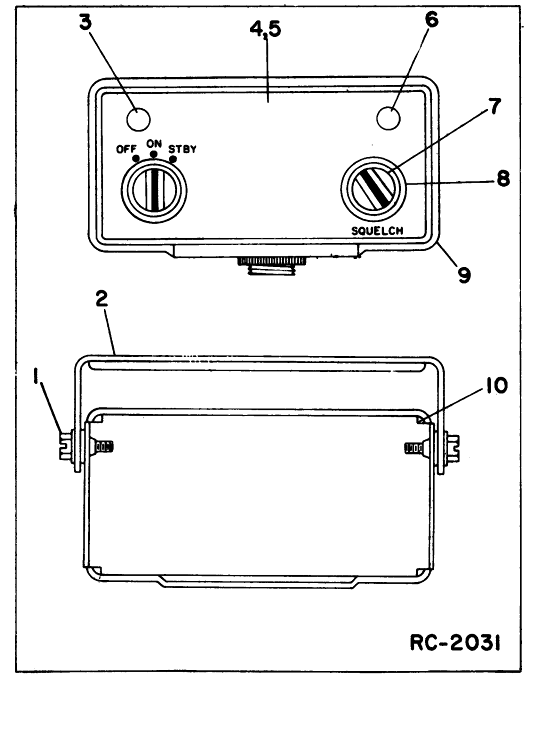
Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - Models 4EC59A86 & 90

Added mike hi, PTT, earphone and ground to Tone Option Jack J702.

Schematic Diagram was:





ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and GE Part Number.

Service parts may be obtained from Authorized GE Communication Equipment Service Stations or through any GE Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. GE Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problems arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-4197

DF-4080

GENERAL ELECTRIC

MOBILE RADIO DEPARTMENT LYNCHBURG, VIRGINIA 24502 CABLE GECOMPROD

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